

Abstract

A tunnel magnetoresistive effective element has a ferromagnetic tunnel effective film with a free layer, a pinned layer and a tunnel barrier layer sandwiched between the free layer and the pinned layer, a magnetic bias means, a first conductive layer, and a second conductive layer. The magnetic bias means apply a bias magnetic field to the free layer of the ferromagnetic tunnel effective film. The first conductive layer and the second conductive layer generate magnetic fields having the same direction as that of the bias magnetic field through a sense current therein to reinforce the bias magnetic field.